

手 続 補 正 書

(法第11条の規定による補正)

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4. 補正の対象 明細書及び請求の範囲

5. 補正の内容

- (1) 別紙のとおり、明細書の第2頁を補正する。
- (2) 別紙のとおり、請求の範囲第1項及び第3項を補正する。

6. 添付書類の目録

- (1) 明細書第2頁、第2-1頁
- (2) 請求の範囲第7頁

この発明は、上記論文の報告にヒントを得てなされたものであり、マイナスイオンにより得られるリラクゼーション作用を充分活かしながら、更にオゾンを共存させてその殺菌力により装置の滅菌作用あるいは制菌作用を高め、良好な室内環境を作り出すことを課題としてなされたものである。

発明の開示

上記の課題を達成するために、この発明の空気清浄装置は、マイナスイオン発生手段と室内空気の循環手段とを備えている空気清浄装置において、室内に放出されて拡散した状態のオゾンの室内雰囲気における濃度の平均値を0.02乃至0.05 ppm に保つ能力を有するオゾン発生手段を備えており、マイナスイオンと上記濃度のオゾンとを室内雰囲気中に併存させるようにしている。またこの発明の空気清浄方法は、上記の空気清浄装置を使用し、室内空気を循環・攪拌することによりマイナスイオンと上記濃度のオゾンとを雰囲気中に併存させて良好な室内環境を作り出すようにしている。上記の範囲のオゾン濃度であれば、臭いが強く、室内に居る人が頭痛を起こすなどの人体に及ぼす悪影響はなく、後述のようにマイナスイオンとの相乗作用によって、オゾン単独の場合よりも高い滅菌あるいは制菌の作用が発揮される。

しかも、マイナスイオンのリラクゼーション作用、すなわち人をさわやかな気分にすると共に、血液の浄化、精神安定、疲労回復等の作用が発揮され、良好な室内環境を作り出すことができる。また、気流吹き出し口近傍におけるマイナスイオン濃度の平均値を20万乃至100万個/ccに保つ能力を有するマイナスイオン発生手段を用いることによって、室内機器の故障の原因になるなどの悪影響はなく、人が居る環境での使用に適した空気清浄装置を得ることが可能となる。

マイナスイオンはその発生手段の吹き出し口から遠ざかるにつれて急速に消滅してその濃度は低下するが、吹き出し口に比較的近い場所での残存量は発生手段での発生量にある程度左右される。そして、吹き出し口近傍での濃度が100万個/ccを超えると室内にある機器、特に電気回路部品や半導体等に埃が付着しやすくなって故障の原因になるなどの不都合が生ずる。また、吹き出し口近傍での濃度が20万個/ccを下回った場合には、気流がマイナスイオン発生手段を通過する時にマイナスイオンに触れる機会が低下し、オゾンとの相乗作用による滅菌

あるいは制菌の作用をほとんど期待できなくなると考えられる。従って、本願発明の装置におけるマイナスイオン発生手段としては、その気流吹き出し口近傍におけるマイナスイオン濃度の平均値を20万乃至100万個/ccに保つ能力を有

諸 求 の 範 囲

1. (補正後) マイナスイオン発生手段(2)と室内空気の循環手段(4)とを備えている空気清浄装置(1)において、室内に放出されて拡散した状態のオゾンの室内雰囲気における濃度の平均値を0.02乃至0.05 ppm に保つ能力を有するオゾン発生手段(3)を備えており、マイナスイオンと上記濃度のオゾンとを室内雰囲気中に併存させることを特徴とする空気清浄装置。
2. マイナスイオン発生手段(2)が、その気流吹き出し口近傍におけるマイナスイオン濃度の平均値を20万乃至100万個/ccに保つ能力を有するものである請求項1に記載の空気清浄装置。
3. (補正後) マイナスイオン発生手段(2)、室内空気の循環手段(4)、及び室内に放出されて拡散した状態のオゾンの室内雰囲気における濃度の平均値を0.02乃至0.05 ppm に保つ能力を有するオゾン発生手段(3)とを備えた空気清浄装置(1)を使用し、室内空気を循環・攪拌することによりマイナスイオンと上記濃度のオゾンとを雰囲気中に併存させて良好な室内環境を作り出すことを特徴とする空気清浄方法。
4. 使用する空気清浄装置(1)が、気流吹き出し口近傍におけるマイナスイオン濃度の平均値を20万乃至100万個/ccに保つ能力を有するマイナスイオン発生手段(2)を備えたものである請求項3に記載の空気清浄方法。

AMENDMENT

(Amendment in accordance with Article 11 of the Law)

[Amendment Pursuant to PCT Article 34]

To: Examiner of the Patent Office

1. Identification of the International Application

PCT/JP2004/012047

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4. Item to be Amended Description and claims

5. Subject Matter of Amendment

(1) As per the attached sheets, the explanations on page
2 of the description are amended.(2) As per the attached sheet, claims 1 and 3 are
amended.

6. List of Attached Documents

(1) Description on pages 2, 2/1

(2) Claims on page 8

The present invention is achieved by taking a hint from the reports of the above-mentioned papers. More specifically, the present invention is intended to create a comfortable indoor environment by fully utilizing a relaxation effect obtained by negative ions and by allowing the negative ions to coexist with ozone so that the sterilizing effect or the antibacterial effect of an air clarifying apparatus is enhanced by the sterilizing power of the ozone.

DISCLOSURE OF THE INVENTION

For the purpose of attaining the above-mentioned object, an air clarifying apparatus according to the present invention is an air clarifying apparatus comprising a negative ion generating means and an indoor air circulating means, and further comprising an ozone generating means having a capability of maintaining the average concentration value of ozone being in a state of being discharged and scattered in a room at 0.02 to 0.05 ppm in an indoor atmosphere, and negative ions and the ozone having the above-mentioned concentration are allowed to coexist in an indoor atmosphere. In addition, an air clarifying method according to the present invention creates a comfortable indoor environment using the above-mentioned air clarifying apparatus and by circulating and stirring indoor air so that negative ions and the ozone having the above-mentioned concentration are allowed to coexist in an indoor atmosphere. When the concentration of ozone is in the above-mentioned range, adverse effects to the human body, such as a strong odor causing a headache for people living in the room, are not produced. A sterilizing effect or an antibacterial effect higher than that in the case that ozone is used independently is attained by the synergistic effect of ozone and negative ions as described later.

Furthermore, the relaxation effect of negative ions, such as an effect of making people refreshing, a blood

purification effect, a mental stabilization effect and a fatigue recovery effect, can be attained, and a comfortable indoor environment can be created. Still further, because of the use of the negative ion generating means having a capability of maintaining the average concentration value of negative ions in the vicinity of the blowout port at 200,000 to 1,000,000 pieces/cc, adverse effects that may cause indoor equipment to fail are not produced, whereby it is possible to obtain an air clarifying apparatus suited for use in an environment where people live.

Negative ions disappear abruptly as they are away from the blowout port of the negative ion generating means, and the concentration thereof lowers. However, the amount of negative ions remaining in the relatively close vicinity of the blowout port is somewhat dependent on the amount generated using the negative ion generating means. If the concentration in the vicinity of the blowout port is more than 1,000,000 pieces/cc, dust is liable to attach to indoor equipment, more particularly, to electric circuit components and semiconductors, for example, thereby causing inconvenience, such as failures. If the concentration in the vicinity of the blowout port is less than 200,000 pieces/cc, the air flow has a lower chance of touching negative ions when passing through the negative ion generating means, and it is considered that the sterilizing effect or the antibacterial effect owing to the synergistic effect of ozone and negative ions is hardly obtained. For this reason, it is judged that a negative ion generating means having a capability of maintaining the average concentration value of negative ions in the vicinity of the blowout port thereof at 200,000 to 1,000,000 pieces/cc should desirably be used as the negative ion generating means in the air clarifying apparatus according to the present invention.

CLAIMS

1. (Amended) An air clarifying apparatus (1) comprising negative ion generating means (2) and indoor air circulating means (4), and further comprising ozone generating means (3) having a capability of maintaining the average concentration value of ozone being in a state of being discharged and scattered in a room at 0.02 to 0.05 ppm in an indoor atmosphere, being characterized in that negative ions and the ozone having said concentration are allowed to coexist in an indoor atmosphere.

2. The air clarifying apparatus according to claim 1, wherein said negative ion generating means (2) has a capability of maintaining the average concentration value of negative ions in the vicinity of the blowout port thereof at 200,000 to 1,000,000 pieces/cc.

3. (Amended) An air clarifying method for creating a comfortable indoor environment using said air clarifying apparatus (1) comprising said negative ion generating means (2), said indoor air circulating means (4) and said ozone generating means (3) having a capability of maintaining the average concentration value of ozone being in a state of being discharged and scattered in a room at 0.02 to 0.05 ppm in an indoor atmosphere, and by circulating and stirring indoor air so that negative ions and the ozone having said concentration are allowed to coexist in an indoor atmosphere.

4. The air clarifying method according to claim 3, wherein said air clarifying apparatus (1) to be used is equipped with negative ion generating means (2) having a capability of maintaining the average concentration value of negative ions in the vicinity of the blowout port at 200,000 to 1,000,000 pieces/cc.

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